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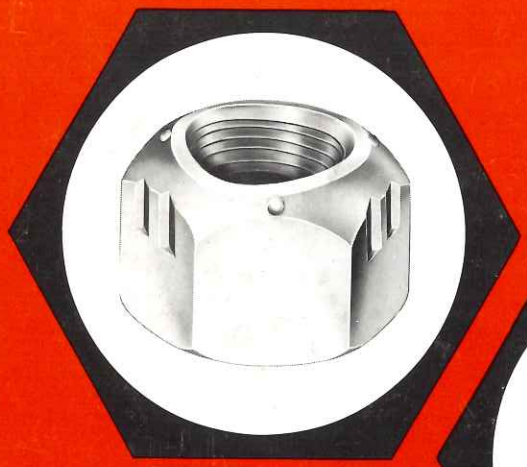
GRIPCO®

FASTENERS

LOCK NUTS



GRIPCO
FASTENERS

11 DEC 1970

RETURN TO
DESIGN DIV.

Gripco Fastener Division / Mite Corporation

SOUTH WHITLEY, INDIANA 46787 – TELEPHONE (219) 723-5111

GRIPCO® PREVAILING TORQUE NUTS

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GRIPCO®
CENTERLOCK NUTS

The Grade A Prevailing Torque Gripco Centerlock Nut was developed for low-cost applications on automated or volume production lines. It is double chamfer, double countersunk, allowing application from either end, with the locking feature at the center threads.

The centerlock feature derives its locking ability from a carefully controlled technique of inward, as well as upward and downward displacement of the center threads of the nut.

GRIPCO®
CROWNLOCK NUTS

Gripco Crownlock Nuts are manufactured in three Specific Grades for application to:

Grade 2 bolts – Grade A (low carbon steel) Type TLA-GRA.

Grade 5 bolts – Grade B (low carbon steel) Type WLA-GRB.

Grade 8 bolts – Grade C (medium carbon steel) Type TLA-GRC.

Gripco Crownlock, the newest concept in prevailing torque nuts, after years of study and testing was developed as a self-orienting prevailing torque nut with a crowned top to meet the exacting requirements for prevailing torque nuts by the automotive, as well as all other types of industries.

GRIPCO CROWNLOCK Nuts offer predictable Torque-Tension relationship in critical applications with Grades 2, 5 & 8 bolts. All new specifications for high performance prevailing torque nuts require cadmium plate or phosphate coating plus lubrication.

Gripco Crownlock Nuts Grade B (WLA-GRB Type) with the new Gripco Twin Delta Deflection* was developed to meet the strength, torque and reapplication requirements for Grade 5 bolts.

Military Specifications: The Gripco Crownlock meets and is approved on Ordnance Corps Specification MS 51922 (Replaces BBNX2, BBNX3, BBNX4 and BBNX5).

The new industrial Fasteners Institute Specifications IFI 100 and IFI 101 are available upon request.

Qualified Gripco Fastener Engineers are available to discuss assembly specifications with all Grade Bolts to assure the structural integrity of your products.

Request samples for your own tests.

*Patented

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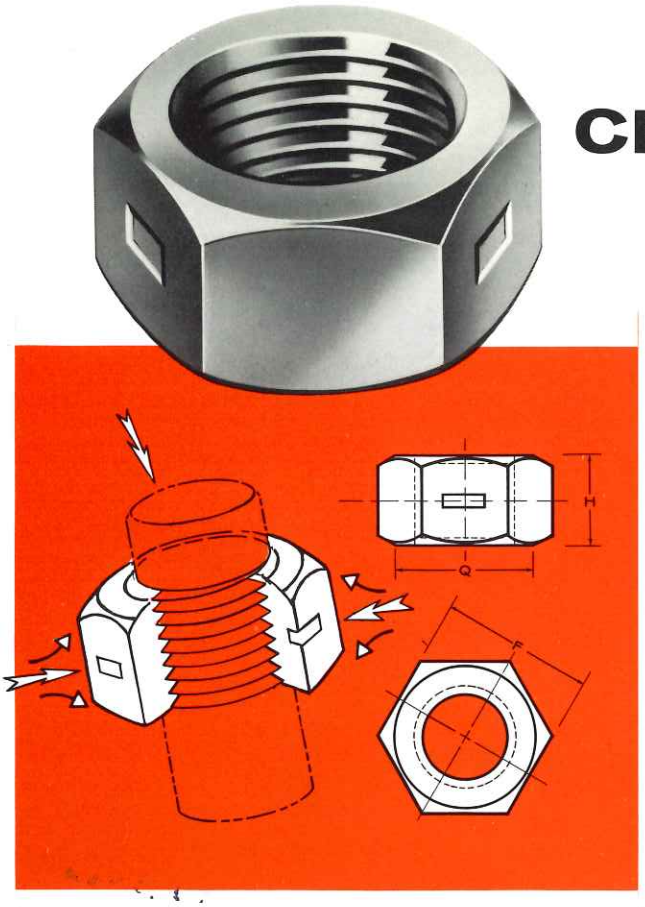


GRIPCO®
CENTERLOCK NUTS

GRADE A – TYPE CLF

DATA:

The prevailing torque Gripco Centerlock Nut is produced for use with Grade 2 bolts. It is manufactured to the Finish Full and Jam sizes with both national coarse and fine threads. It is also produced to machine screwnut across flat dimensions but thicker to incorporate the Centerlock feature. See table below for size range and part numbers.

SPECIFICATIONS:

PREVAILING TORQUE: Meets all requirements of new Industrial Fasteners (I.F.I.) specification 100, as well as United States of America Standards Institute (formerly A.S.A.) prevailing torque nut-specifications. Prevailing torque action is sustained at any point on the bolt thread.

THREAD: Designed with UN-2B thread for applications to Grade 2 bolts (1).

MATERIAL: Low Carbon Steel, Brass, Aluminum, Stainless Steel, Silicone Bronze, Monel.

FINISH: Cadmium or phosphate coated and lubricated.

REUSABILITY: Prevailing torque is retained after repeated applications, even when power driven.

AVAILABILITY: Sizes listed below are normally carried in stock.

IDENTIFICATION: None required as a Grade A Nut.

SPECIAL PREVAILING TORQUE: Higher or lower than normal torque can be supplied to meet specific applications.

(1) Can also be used on many Grade 5 bolt applications.

MACHINE SCREW NUT SERIES

SIZE	STEEL PART NO.	F WIDTH	H HEIGHT	WEIGHT PER M (LBS.)	QUANTITY IN CTN.
4-40	CLMT-0440-S	1/4	9/64	1.50	40,000
6-32	CLMT-0632-S	5/16	5/32	2.9	30,000
8-32	CLMT-0832-S	11/32	5/32	4.8	20,000
10-24	CLMT-1024-S	3/8	3/16	4.7	20,000
10-32	CLMT-1032-S	3/8	3/16	4.7	20,000
12-24	CLMT-0224-S	7/16	7/32	7.0	20,000
12-28	CLMT-0228-S	7/16	7/32	7.0	20,000

FINISHED HEXAGON NUT SERIES†

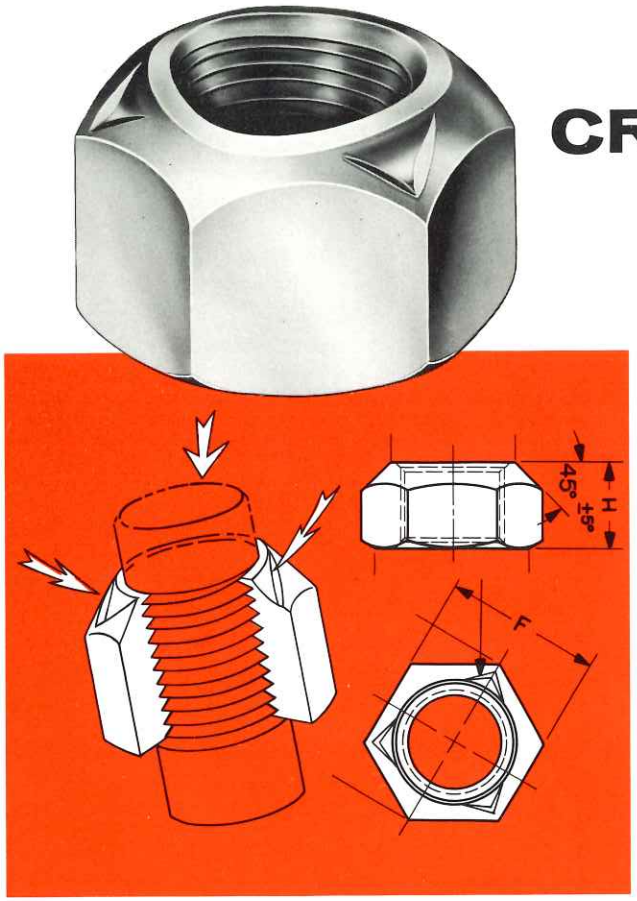
COARSE		FINE		FULL THICKNESS				JAM THICKNESS*			
SIZE	STEEL PART NO.	SIZE	STEEL PART NO.	F WIDTH	H HEIGHT	WEIGHT PER M (LBS.)	QUANTITY IN CTN.	F WIDTH	H HEIGHT	WEIGHT PER M (LBS.)	QUANTITY IN CTN.
1/4-20	CLF-1420-S	1/4-28	CLF-1428-S	7/16	7/32	7.2	20,000				
5/16-18	CLF-5618-S	5/16-24	CLF-5624-S	1/2	17/64	10.6	14,000				
3/8-16	CLF-3816-S	3/8-24	CLF-3824-S	9/16	21/64	15.3	8,500	9/16	7/32	10.3	10,500
7/16-14	CLF-7614-S	7/16-20	CLF-7620-S	11/16	3/8	27.8	6,000	11/16	1/4	18.4	9,000
1/2-13	CLF-1213-S	1/2-20	CLF-1220-S	3/4	7/16	36.0	5,000	3/4	5/16	25.9	8,000
9/16-12	CLF-9612-S	9/16-18	CLF-9618-S	7/8	31/64	56.2	3,300	7/8	5/16	36.7	5,000
5/8-11	CLF-5811-S	5/8-18	CLF-5818-S	15/16	35/64	69.2	2,500	15/16	3/8	48.2	4,000
3/4-10	CLF-3410-S	3/4-16	CLF-3416-S	1 1/8	41/64	127.	1,500	1 1/8	27/64	85.8	2,000
7/8- 9	CLF-7809-S	7/8-14	CLF-7814-S	1 5/16	3/4	199.	950	1 5/16	31/64	131.	1,400
1- 8	CLF-10008-S	1-14	CLF-10014-S	1 1/2	55/64	294.	725	1 1/2	35/64	193.	1,000

Part numbers, Centerlock Nuts of materials other than steel, change letter "S" in Part No. to "B" Brass – "A" Alum. – "X" Stainless Steel – "E" Silicone Bronze – "M" Monel. Samples and prices of Centerlock Nuts will be furnished on request.

When ordering Jam nuts, add suffix JAM after part number. Example: CLF-3816-S-JAM.

*Jam nuts smaller than 3/8" cannot accommodate the Centerlock feature and are therefore not available.

†Heavy Hexagon Series Centerlock Nuts are manufactured on special request. Write for details.



GRIPCO®
CROWNLOCK NUTS

GRADE A – TYPE TLA-GRA

DATA:

A low cost all metal low carbon steel, precision manufactured prevailing torque nut. The top thread section is deflected at 120° intervals to produce positive prevailing torque for repeated applications.

SPECIFICATIONS:

PREVAILING TORQUE – Meets all requirements for new Industrial Fasteners (I. F. I.) and United States of America Standards Institute (formerly A. S. A.) prevailing torque nut specifications. Prevailing torque action is sustained at any point on the bolt thread.

THREAD: Designed with UN – 2B thread for application to Grade 2 bolts. (1)

MATERIAL: Low carbon steel. (not heat treated).

FINISH: Cadmium or phosphate coated and lubricated.

REUSABILITY: Prevailing torque is retained after repeated applications, even when power driven.

AVAILABILITY: Sizes listed are normally carried in stock for immediate delivery. Not manufactured in machine screw sizes or Jam dimensions.

IDENTIFICATION: No markings on the nut indicate it is a Grade A locknut.

SPECIAL PREVAILING TORQUE: Higher or lower than standard torque can be supplied to meet specific applications.

(1) Gripco Grade A Crownlock Nuts are manufactured primarily for Grade 2 bolt applications but also can be used for some Grade 5 bolt applications.

GRADE A CROWNLOCK
3 point deflection, downward and inward is used to produce positive repeated prevailing torque.

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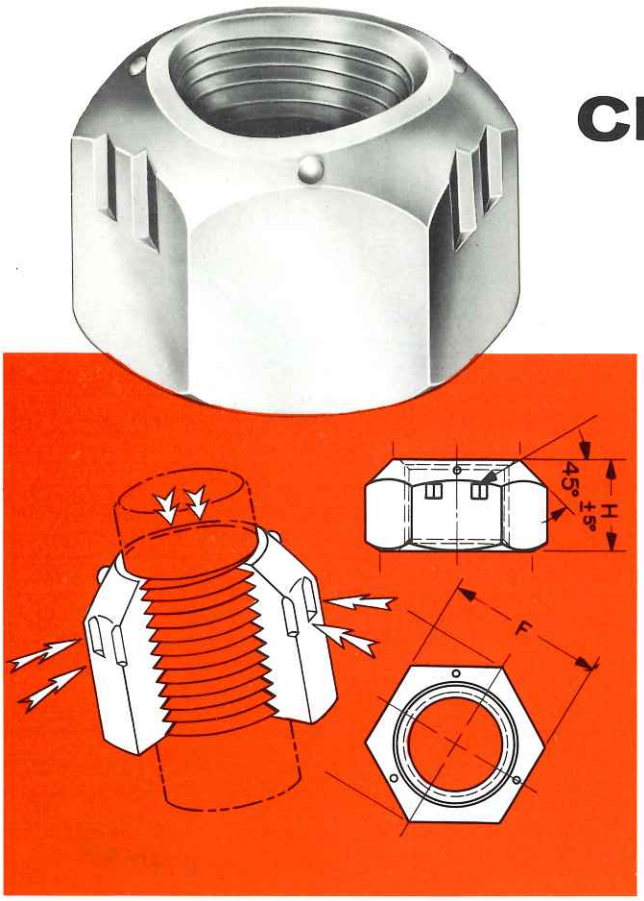
Sizes — Part Numbers — Dimensions (Samples and Net Prices Available on request)

SIZE	PART NUMBER	F WIDTH ACROSS FLATS			H THICKNESS			CTN. QTY.	WT. PER M
		NOM.	MAX.	MIN.	NOM.	MAX.	MIN.		
1/4-20	TLA-1420-GRA	7/16	.437	.428	7/32	.226	.212	20,000	6.7
1/4-28	TLA-1428-GRA	7/16	.437	.428	7/32	.226	.212	20,000	6.7
5/16-18	TLA-5618-GRA	1/2	.500	.489	17/64	.273	.258	14.000	9.8
5/16-24	TLA-5624-GRA	1/2	.500	.489	17/64	.273	.258	14,000	9.8
3/8-16	TLA-3816-GRA	9/16	.562	.551	21/64	.337	.320	8,500	13.4
3/8-24	TLA-3824-GRA	9/16	.562	.551	21/64	.337	.320	8,500	13.4
7/16-14	TLA-7614-GRA	11/16	.687	.675	3/8	.385	.365	6,000	25.0
7/16-20	TLA-7620-GRA	11/16	.687	.675	3/8	.385	.365	6,000	25.0
1/2-13	TLA-1213-GRA	3/4	.750	.736	7/16	.448	.427	5,000	32.5
1/2-20	TLA-1220-GRA	3/4	.750	.736	7/16	.448	.427	5,000	32.5
9/16-12	TLA-9612-GRA	7/8	.875	.861	31/64	.496	.473	3,300	53.7
9/16-18	TLA-9618-GRA	7/8	.875	.861	31/64	.496	.473	3,300	53.7
5/8-11	TLA-5811-GRA	15/16	.937	.922	35/64	.559	.535	2,500	67.0
5/8-18	TLA-5818-GRA	15/16	.937	.922	35/64	.559	.535	2,500	67.0
3/4-10	TLA-3410-GRA	1 1/8	1.125	1.088	41/64	.665	.617	1.500	115.0
3/4-16	TLA-3416-GRA	1 1/8	1.125	1.088	41/64	.665	.617	1,500	115.0
7/8-9	TLA-7809-GRA	1 5/16	1.312	1.269	3/4	.776	.724	950	189.0
7/8-14	TLA-7814-GRA	1 5/16	1.312	1.269	3/4	.776	.724	950	189.0
1-8	TLA-10008-GRA	1 1/2	1.500	1.450	55/64	.887	831.	725	280.0
1-14	TLA-10014-GRA	1 1/2	1.500	1.450	55/64	.887	.831	725	280.0
1 1/8-7	TLA-11807-GRA	1 11/16	1.687	1.631	21/32	.999	.939	500	386.0
1 1/8-12	TLA-11812-GRA	1 11/16	1.687	1.631	31/32	.999	.939	500	386.0
1 1/4-7	TLA-11407-GRA	1 7/8	1.875	1.812	1 1/16	1.094	1.030	375	515.0
1 1/4-12	TLA-11412-GRA	1 7/8	1.875	1.812	1 1/16	1.094	1.030	375	515.0
1 3/8-6	TLA-13806-GRA	2 1/16	2.062	1.994	1 11/64	1.206	1.138	275	700.0
1 3/8-12	TLA-13812-GRA	2 1/16	2.062	1.994	1 11/64	1.206	1.138	275	700.0
1 1/2-6	TLA-11206-GRA	2 1/4	2.250	2.175	1 9/32	1.317	1.245	220	863.0
1 1/2-12	TLA-11212-GRA	2 1/4	2.250	2.175	1 9/32	1.317	1.245	220	863.0



GRADE B CROWNLOCK

The Twin Delta Deflection** produces repeated positive prevailing torque by a uniform deformation of nut frame and threads.

GRIPCO®
CROWNLOCK NUTS

GRADE B — TYPE WLA-GRB

DATA:

A low cost, low carbon steel, precision manufactured prevailing torque nut. The grade B Crownlock (Type WLA-GRB) is thicker than Grade A or C to meet requirements of Grade 5 bolt specifications. The "New Twin Delta Deflection" guarantees prevailing torque through repeated applications. Samples are available on request for your tests.**

SPECIFICATIONS:

PREVAILING TORQUE: Meets automotive torque-tension, as well as the new industrial Fasteners Institute (I. F. I.) and United States of America Standards Institute (USASI) (formerly A.S.A.) prevailing torque nut specifications.

THREAD: Designed with UN–2B thread for use with Grade 5 bolt. (1)

MATERIAL: Low carbon steel. (not heat treated).

FINISH: Cadmium or phosphate coated and lubricated.

REUSABILITY: Tests prove that the Gripco New Twin Delta Deflection** gives initial positive prevailing torque as well as repeated reapplications with little loss of locking torque.

AVAILABILITY: Sizes listed are normally carried in stock for immediate delivery.

IDENTIFICATION: Three small dots, 120° apart, on the crown as well as the Twin Delta Deflection.**

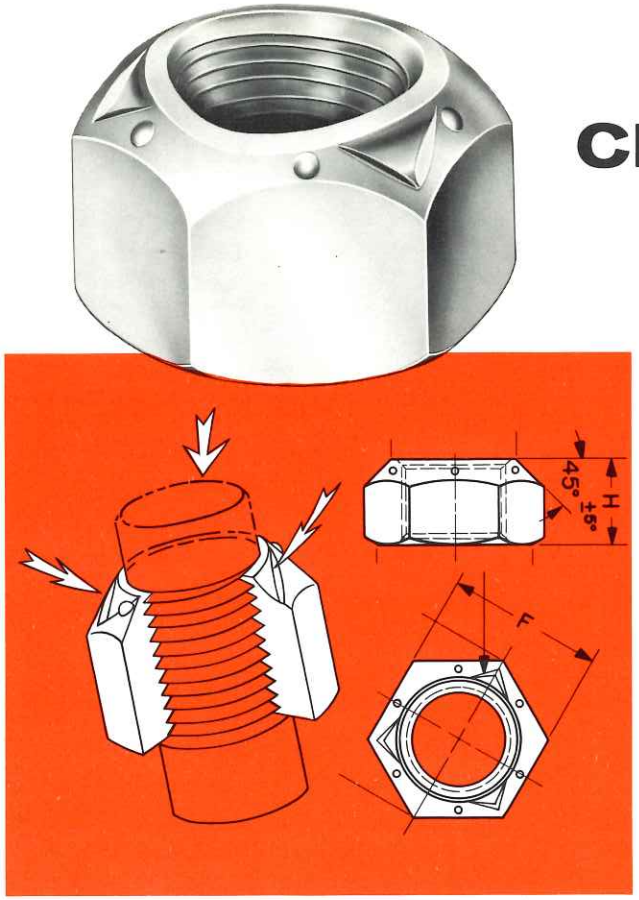
(1) May also be used on Grade 2 bolts.

*These sizes will have same type locking feature as Crownlock Nuts A and C.

Sizes — Part Numbers — Dimensions (Samples and Net Prices Available on request)

SIZE	PART NUMBER	F WIDTH ACROSS FLATS			H THICKNESS			CTN. QTY.	WT. PER M
		NOM.	MAX.	MIN.	NOM.	MAX.	MIN.		
8-32	*TLA-0832-GRB	11/32	.344	.332	3/16	.195	.179	30,000	3.43
10-24	*TLA-1024-GRB	3/8	.375	.362	13/64	.211	.195	20,000	4.35
10-32	*TI A-1032-GRB	3/8	.375	.362	13/64	.211	.195	20,000	4.35
1/4-20	WLA-1420-GRB	7/16	.437	.428	1/4	.257	.243	20,000	8.0
1/4-28	WLA-1428-GRB	7/16	.437	.428	1/4	.257	.243	20,000	8.0
5/16-18	WLA-5618-GRB	1/2	.500	.489	19/64	.302	.292	14,000	10.8
5/16-24	WLA-5624-GRB	1/2	.500	.489	19/64	.302	.292	14.000	10.8
3/8-16	WLA-3816-GRB	9/16	.562	.551	3/8	.377	.360	8,500	16.0
3/8-24	WLA-3824-GRB	9/16	.562	.551	3/8	.377	.360	8,500	16.0
7/16-14	WLA-7614-GRB	11/16	.687	.675	27/64	.430	.410	6,000	29.8
7/16-20	WLA-7620-GRB	11/16	.687	.675	27/64	.430	.410	6,000	29.8
1/2-13	WLA-1213-GRB	3/4	.750	.736	1/2	.510	.490	4,000	38.5
1/2-20	WLA-1220-GRB	3/4	.750	.736	1/2	.510	.490	4,000	38.5
9/16-12	WLA-9612-GRB	7/8	.875	8.61	35/64	.555	.535	3,300	58.5
9/16-18	WLA-9618-GRB	7/8	.875	.861	35/64	.555	.535	3,300	58.5
5/8-11	WLA-5811-GRB	15/16	.937	.922	41/64	.645	.621	2,500	78.9
5/8-18	WLA-5818-GRB	15/16	.937	.922	41/64	.645	.621	2,500	78.9
3/4-10	WLA-3410-GRB	1 1/8	1.125	1.088	47/64	.750	.702	1,500	120.0
3/4-16	WLA-3416-GRB	1 1/8	1.125	1.088	47/64	.750	.702	1,500	120.0
7/8-9	WLA-7809-GRB	1 5/16	1.312	1.269	27/32	.862	.810	950	199.0
7/8-14	WLA-7814-GRB	1 5/16	1.312	1.269	27/32	.862	.810	950	199.0
1-8	WLA-10008-GRB	1 1/2	1.500	1.450	15/16	.958	.902	600	294.0
1-14	WLA-10014-GRB	1 1/2	1.500	1.450	15/16	.958	.902	600	294.0

**Patented.



GRIPCO®
CROWNLOCK NUTS

GRADE C — TYPE TLA-GRC

DATA:

Gripco Crownlock Grade C offers a proven predictable torque-tension relationship in critical, high strength applications with Grade 8 Bolts. After years of study and tests, Crownlock was developed to meet the exacting specifications of automotive fastener engineering specialists. The exclusive Gripco top thread deflections are at 120° intervals in the crown of the nut. Samples are available on request for your tests.

SPECIFICATIONS:

LOCKING ABILITY: Meets automotive torque-tension, as well as new Industrial Fasteners Institute (I. F. I.) and United States of America Standards Institute (USASI) (formerly A. S. A.) lock nut specifications.

THREADS: Designed with UN – 2B thread for use with Grade 8 bolts.

MATERIAL: Medium carbon steel (heat treated RC 24-32, RC 26-32, 1" & over).

FINISH: Cadmium or phosphate coated and lubricated.

REUSABILITY: Locking torque is retained after repeated applications, even when power driven.

AVAILABILITY: Sizes listed below through 1" are normally carried in stock for immediate delivery. Sizes larger than 1" are to special order. Not manufactured in machine screw sizes or jam dimensions.

IDENTIFICATION: Six small dots, 60° apart, on the Crown of the nut.

GRADE C CROWNLOCK
3 point deflection, downward and inward is used to produce positive repeated prevailing torque.

Sizes — Part Numbers — Dimensions (Samples and Net Prices Available on request)

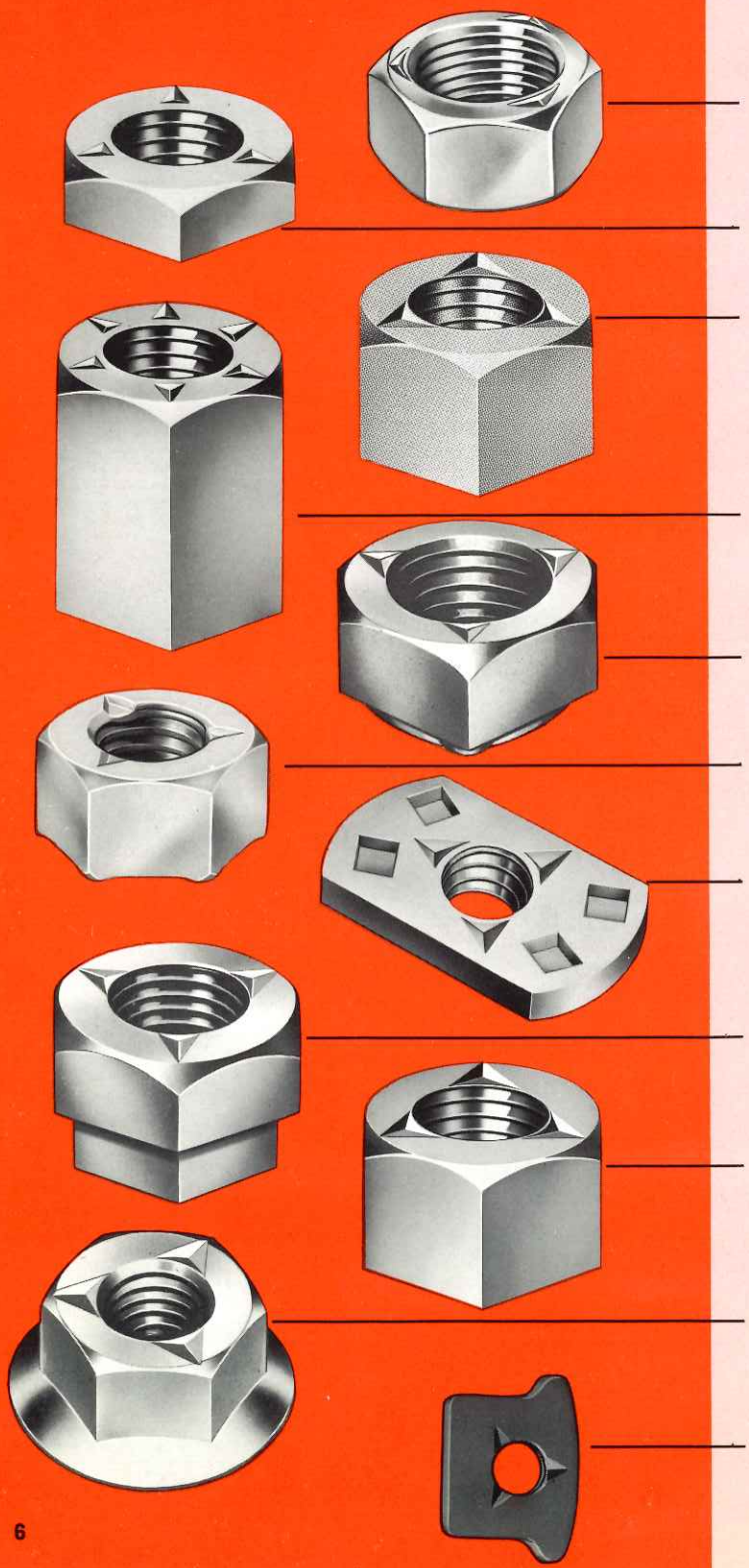
SIZE	PART NUMBER	F WIDTH ACROSS FLATS			H THICKNESS			CTN. QTY.	WT. PER M
		NOM.	MAX.	MIN.	NOM.	MAX.	MIN.		
¼-20	TLA-1420-GRC	7/16	.437	.428	7/32	.226	.212	20,000	6.7
¼-28	TLA-1428-GRC	7/16	.437	.428	7/32	.226	.212	20,000	6.7
5/16-18	TLA-5618-GRC	½	.500	.489	17/64	.273	.258	14,000	9.8
5/16-24	TLA-5624-GRC	½	.500	.489	17/64	.273	.258	14,000	9.8
⅜-16	TLA-3816-GRC	9/16	.562	.551	21/64	.337	.320	8,500	13.4
⅜-24	TLA-3824-GRC	9/16	.562	.551	21/64	.337	.320	8,500	13.4
7/16-14	TLA-7614-GRC	11/16	.687	.675	⅜	.385	.365	6,000	25.0
7/16-20	TLA-7620-GRC	11/16	.687	.675	⅜	.385	.365	6,000	25.0
½-13	TLA-1213-GRC	¾	.750	.736	7/16	.448	.427	5,000	32.5
½-20	TLA-1220-GRC	¾	.750	.736	7/16	.448	.427	5,000	32.5
9/16-12	TLA-9612-GRC	⅞	.875	.861	31/64	.496	.473	3,300	53.7
9/16-18	TLA-9618-GRC	⅞	.875	.861	31/64	.496	.473	3,300	53.7
⅝-11	TLA-5811-GRC	15/16	.937	.922	35/64	.559	.535	2,500	67.0
⅝-18	TLA-5818-GRC	15/16	.937	.922	35/64	.559	.535	2,500	67.0
¾-10	TLA-3410-GRC	1⅛	1.125	1.088	41/64	.665	.617	1,500	115.0
¾-16	TLA-3416-GRC	1⅛	1.125	1.088	41/64	.665	.617	1,500	115.0
⅞-9	TLA-7809-GRC	1 5/16	1.312	1.269	¾	.776	.724	950	189.0
⅞-14	TLA-7814-GRC	1 5/16	1.312	1.269	¾	.776	.724	950	189.0
1-8	TLA-10008-GRC	1½	1.500	1.450	55/64	.887	.831	725	280.0
1-14	TLA-10014-GRC	1½	1.500	1.450	55/64	.887	.831	725	280.0
1⅛-7	TLA-11807-GRC	1 11/16	1.687	1.631	21/32	.999	.939	500	386.0
1⅛-12	TLA-11812-GRC	1 11/16	1.687	1.631	21/32	.999	.939	500	386.0
1¼-7	TLA-11407-GRC	1⅞	1.875	1.812	1 1/16	1.094	1.030	375	515.0
1¼-12	TLA-11412-GRC	1⅞	1.875	1.812	1 1/16	1.094	1.030	375	515.0
1⅜-6	TLA-13806-GRC	2 1/16	2.062	1.994	1 11/64	1.206	1.138	275	700.0
1⅜-12	TLA-13812-GRC	2 1/16	2.062	1.994	1 11/64	1.206	1.138	275	700.0
1½-6	TLA-11206-GRC	2¼	2.250	2.175	1 9/32	1.317	1.245	220	863.0
1½-12	TLA-11212-GRC	2¼	2.250	2.175	1 9/32	1.317	1.245	220	863.0

GRIPCO®
NUTS WITH TOPLOCK

The Gripco Toplock Nut in the Finished Full Series is no longer manufactured. It has been replaced by the Gripco Grade "A" Crownlock Nut.

The Gripco Toplock feature makes it possible to produce low cost, all metal prevailing torque nuts from clinch, weld, jam, Hi, flange and special configuration nuts. Positive locking action takes place when one or two bolt threads protrude beyond top of the nut.

The Gripco Toplock feature makes it possible to produce prevailing torque nuts as listed below:



Toplock Steel Machine Screw Nuts
See table opposite page

Toplock Steel Finished Jam Nuts
See table opposite page

Toplock Steel Heavy Series Full and Jam Nuts
Write for dimensional prints and samples

Toplock Hi Nuts
Light and Finished Series
(also can be supplied with centerlock and twin Delta Deflection). Write for prints N-010 (light series) N-268 (finished series)

Toplock Pilot Weld Nuts
See Catalog Section 172-A
Style 1-3 projections Style 2-6 projections

Toplock Countersunk Weld Nuts
See Catalog Section 172-A

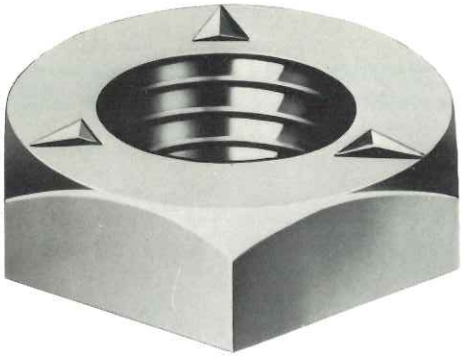
Toplock Tab Weld Nuts
See Catalog Section 172-A
Projection and Spot Weld Type

Toplock Clinch Nuts
See Catalog Section 172-A

Toplock Finished Full and Jam Nuts in Aluminum, Brass, Stainless Steel, Silicon Bronze and Monel
(Write for samples and prices)

Toplock Flange and Washer Nuts
See Catalog Section 169-A

Toplock Special Configuration Nuts
Either manufactured complete by Gripco or parts supplied by customer to incorporate locking feature.



GRIPCO®
TOPLOCK NUTS

Sizes — Part Numbers — Dimensions

MACHINE SCREW NUT SERIES

COARSE SIZE	COARSE STEEL PART NO.	FINE SIZE	FINE STEEL PART NO.	WIDTH	HEIGHT	WEIGHT PER M (LBS.)	QUANTITY IN CTN.
6-32	TLM-0632-S	6-40	TLM-0640-S	5/16	7/64	2.10	50,000
8-32	TLM-0832-S	8-36	TLM-0836-S	11/32	1/8	2.80	40,000
10-24	TLM-1024-S	10-32	TLM-1032-S	3/8	1/8	3.30	35,000
12-24	TLM-0224-S	12-28	TLM-0228-S	7/16	5/32	5.60	14,000

FINISHED HEXAGON JAM NUT SERIES

COARSE SIZE	COARSE STEEL PART NO.	FINE SIZE	FINE STEEL PART NO.	WIDTH	HEIGHT	WEIGHT PER M (LBS.)	QUANTITY IN CTN.
1/4-20	TLF-1420-S-Jam	1/4-28	TLF-1428-S-Jam	7/16	5/32	5.3	28,000
5/16-18	TLF-5618-S-Jam	5/16-24	TLF-5624-S-Jam	1/2	3/16	7.6	18,000
3/8-16	TLF-3816-S-Jam	3/8-24	TLF-3824-S-Jam	9/16	7/32	10.3	10,500
7/16-14	TLF-7614-S-Jam	7/16-20	TLF-7620-S-Jam	11/16	1/4	18.4	9,000
1/2-13	TLF-1213-S-Jam	1/2-20	TLF-1220-S-Jam	3/4	5/16	25.9	8,000
9/16-12	TLF-9612-S-Jam	9/16-18	TLF-9618-S-Jam	7/8	5/16	36.7	5,000
5/8-11	TLF-5811-S-Jam	5/8-18	TLF-5818-S-Jam	15/16	3/8	48.2	4,000
3/4-10	TLF-3410-S-Jam	3/4-16	TLF-3416-S-Jam	1 1/8	27/64	85.8	2,400
7/8- 9	TLF-7809-S-Jam	7/8-14	TLF-7814-S-Jam	1 5/16	31/64	131.0	1,400
1- 8	TLF-10008-S-Jam	1-14	TLF-10014-S-Jam	1 1/2	35/64	193.0	1,000
1 1/8- 7	TLF-11807-S-Jam	1 1/8-12	TLF-11812-S-Jam	1 11/16	39/64	270.0	800
1 1/4- 7	TLF-11407-S-Jam	1 1/4-12	TLF-11412-S-Jam	1 7/8	23/32	411.0	500
1 3/8- 6	TLF-13806-S-Jam	1 3/8-12	TLF-13812-S-Jam	2 1/16	25/32	543.0	390
1 1/2- 6	TLF-11206-S-Jam	1 1/2-12	TLF-11212-S-Jam	2 1/4	27/32	689.0	270

NOTE — Sizes 1/2 and larger normally have 6 point deflection instead of three.

- Gripco Steel Toplock Machine Screw and Finished Jam Nuts are normally carried in stock.
- Gripco Brass Toplock Machine Screw, Finished Full and Jam Nuts are normally carried in stock.
- Gripco Toplock Aluminum, Silicon Bronze, Monel and Stainless Steel Nuts in Machine Screw, Finished Full and Jam Series are manufactured to special order.
- Internal threaded parts of special configuration can be Toplocked or Centerlocked depending on the shape. Parts can be manufactured by Gripco or supplied by the customer. Send prints and/or sample parts.
- All Gripco Locknuts can be supplied with special High or Low Torque for specific applications. Check with the Gripco representative in your area.
- Samples of the many different type Gripco Toplock Nuts as well as price quotations will be supplied on request.

GRIPCO® CENTERLOCK CAP NUTS*

OPEN-END AND CLOSED-END

The GRIPCO Open-End Cap Nut can be furnished with or without the Centerlocking feature. GRIPCO Closed-End Cap Nuts are only furnished with the Centerlocking feature. Both nut types are for applications where a decorative appearance is required and also as a protective measure against snagged clothing and contamination.

SUGGESTED USES: Playground equipment, valves, metal patio and porch furniture, lawn mowers, grocery carts, casters, toys, appliances, hospital equipment.

CENTERLOCK CAP NUT OPEN-END

Without Centerlock Feature

SPECIFICATIONS

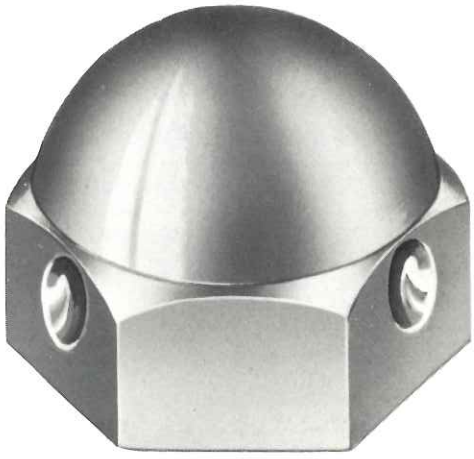
LOCKING ABILITY: The GRIPCO Centerlocking feature provides a positive locking action on standard commercial bolts. Locking action takes place as soon as one or two bolt threads have engaged the locking feature. ***Special, low or high locking torque can be supplied for special applications.***

REUSABILITY: Adequate locking torque is maintained during repeated applications of nut.

MATERIALS: Steel, Brass, Aluminum, Stainless Steel.

FINISH: Various plating finishes such as cadmium and phosphate are available at additional cost. Copper, tin, nickel and other plating can be furnished. See page 11 for further details.

DIMENSIONS: Manufactured to standard low crown cap nut dimensions. High crown, closed-end, Centerlock cap nuts are manufactured to special order. Write for details.



CENTERLOCK CAP NUT CLOSED-END

GRIPCO® CENTERLOCK CAP NUTS

Sizes — Part Numbers — Dimensions

OPEN-END CAP NUTS

With or without Centerlock feature, as desired.

	STEEL**					BRASS*—ALUMINUM*			
								WEIGHT PER M (LBS.)	
SIZE	WITH LOCK PART NO.	LESS LOCK PART NO.	WIDTH ACROSS FLATS	HEIGHT	WEIGHT PER M (LBS.)	WIDTH ACROSS FLATS	HEIGHT	BRASS	ALUMINUM
6-32†	CLOE-0632-B or A	OE-0632-B or A	—	—	—	5/16	1/4	4.2	1.40
8-32	CLOE-0832-S	OE-0832-S	5/16	15/64	3.85	5/16	1/4	4.0	1.40
10-24	CLOE-1024-S	OE-1024-S	3/8	15/64	5.05	3/8	9/32	6.7	2.20
10-32	CLOE-1032-S	OE-1032-S	3/8	15/64	5.05	3/8	9/32	6.7	2.20
1/4-20	CLOE-1420-S	OE-1420-S	7/16	9/32	7.2	7/16	21/64	10.0	3.33
1/4-28	CLOE-1428-S	OE-1428-S	7/16	9/32	7.2	7/16	21/64	10.0	3.33
5/16-18	CLOE-5618-S	OE-5618-S	9/16	3/8	18.5	9/16	3/8	18.5	6.15
5/16-24	CLOE-5624-S	OE-5624-S	9/16	3/8	18.1	9/16	3/8	18.5	6.15
3/8-16	CLOE-3816-S	OE-3816-S	9/16	13/32	16.5	5/8	27/64	25.0	8.33
3/8-24	CLOE-3824-S	OE-3824-S	9/16	13/32	15.6	5/8	27/64	25.0	8.33

***Brass and aluminum nuts are manufactured on special order. When ordering brass nuts, change part number suffix "S" to "B"; for aluminum use "A"; for stainless steel use "X" and specify type of stainless desired.**

****Also available in stainless steel but not in complete range of sizes. Write for current sizes.**

†Available in brass or aluminum only.

CLOSED-END CAP NUTS

Available only with Centerlock feature incorporated.

STEEL**							
COARSE		FINE					
SIZE	PART NO.	SIZE	PART NO.	WIDTH ACROSS FLATS	HEIGHT	THREAD DEPTH	APPROX. WT. PER M (LBS.)
6-32	CLCE-0632-S			5/16	11/32	5/32	4.9
8-32	CLCE-0832-S			5/16	11/32	5/32	4.9
10-24	CLCE-1024-S	10-32	CLCE-1032-S	3/8	11/32	3/16	6.7
1/4-20	CLCE-1420-S	1/4-28	CLCE-1428-S	7/16	15/32	1/4	11.5
5/16-18	CLCE-5618-S	5/16-24	CLCE-5624-S	1/2	17/32	5/16	16.3
3/8-16	CLCE-3816-S	3/8-24	CLCE-3824-S	9/16	5/8	3/8	22.8
7/16-14	CLCE-7614-S	7/16-20	CLCE-7620-S	5/8	11/16	7/16	28.8
1/2-13	CLCE-1213-S	1/2-20	CLCE-1220-S	3/4	13/16	1/2	52.5
9/16-12	CLCE-9612-S	9/16-18	CLCE-9618-S	7/8	15/16	9/16	75.4
5/8-11	CLCE-5811-S	5/8-18	CLCE-5818-S	15/16	1″	5/8	98.0
3/4-10	CLCE-3410-S	3/4-16	CLCE-3416-S	1 1/16	1 5/32	3/4	142.5

ALUMINUM		BRASS		WIDTH ACROSS FLATS	HEIGHT	THREAD DEPTH	APPROX. WEIGHT PER M (LBS.)	
SIZE	PART NO.	SIZE	PART NO.				ALUMINUM	BRASS
6-32	CLCE-0632-A	6-32	CLCE-0632-B	5/16	9/32	3/16	1.37	4.5
8-32	CLCE-0832-A	8-32	CLCE-0832-B	5/16	9/32	3/16	1.37	4.1
10-24	CLCE-1024-A	10-24	CLCE-1024-B	3/8	11/32	7/32	2.43	7.3
10-32	CLCE-1032-A	10-32	CLCE-1032-B	3/8	11/32	7/32	2.43	7.3
1/4-20	CLCE-1420-A	1/4-20	CLCE-1420-B	7/16	3/8	7/32	3.35	10.0
1/4-28	CLCE-1428-A	1/4-28	CLCE-1428-B	7/16	3/8	1/4	3.35	10.0
5/16-18	CLCE-5618-A	5/16-18	CLCE-5618-B	9/16	7/16	9/32	6.50	19.5
5/16-24	CLCE-5624-A	5/16-24	CLCE-5624-B	9/16	7/16	9/32	6.50	19.5
3/8-16	CLCE-3816-A	3/8-16	CLCE-3816-B	5/8	1/2	5/16	8.50	25.5
3/8-24	CLCE-3824-A	3/8-24	CLCE-3824-B	5/8	1/2	5/16	8.50	25.5
		7/16-14	CLCE-7614-B	3/4	9/16	3/8		45.5
		1/2-13	CLCE-1213-B	3/4	9/16	5/16		40.0
		5/8-11	CLCE-5811-B	15/16	3/4	7/16		80.0
		3/4-10	CLCE-3410-B	1 1/16	7/8	1/2		115.0

****Availability — Normally not carried in stock in all sizes and materials. However many sizes are in stock. Check for availability.**

MECHANICAL AND PERFORMANCE REQUIREMENTS

for prevailing-Torque type steel hexagon Locknut

INDUSTRIAL FASTENERS INSTITUTE STANDARD #100

1.0 SCOPE

1.1 SCOPE. This standard establishes the dimensional, mechanical and performance requirements for prevailing-torque type steel hexagon locknuts.

1.2 DEFINITION. A prevailing-torque type locknut is a nut which is frictionally resistant to rotation due to a self-contained prevailing-torque feature, and not because of a compressive load developed against the bearing surface of the locknut.

2.0 DESIGNATIONS

2.1 GRADES. There are three grades of prevailing-torque type steel locknuts designated respectively as Grade A, B, and C.

Each grade of locknut is suggested for use with bolts having specified minimum tensile strengths within the following values: —

GRADE OF LOCKNUT	SPECIFIED MIN ULT TENSILE STRENGTH OF BOLT, psi
Grade A	not greater than 90,000
Grade B	not greater than 120,000
Grade C	not less than 105,000, nor greater than 150,000

3.0 REQUIREMENTS

3.1 MATERIALS AND PROCESSES

3.1.1 MATERIAL. Locknuts shall be made of carbon or alloy steel of a grade adequate for the locknut to meet the mechanical and performance requirements of this standard. The prevailing-torque element of insert design locknuts may be of a material other than steel.

3.1.2 HEAT TREATMENT. Grade A locknuts shall not be heat treated, except on agreement between producer and user. Grades B and C locknuts may be heat treated as necessary to meet the mechanical and performance requirements of this standard.

3.1.3 FINISH. Locknuts may be furnished plain (bare metal) or with a protective coating (electro-deposited plating or chemical conversion coating) as specified by the user. Unless otherwise specified, locknuts shall be furnished plain. All locknuts shall be provided with an additional supplementary lubricant which shall be clean and dry to the touch. The performance of locknuts which are furnished with a protective coating shall not deteriorate when locknuts are stored indoors for a period of six months.

In cases where locknuts are given a protective coating following delivery to the purchaser, the locknut producer shall not be held responsible for failures of the locknut to meet dimensional, mechanical, or performance requirements traceable to plating or coating practice.

3.2 DIMENSIONAL REQUIREMENTS

3.2.2 THREAD FORM, SERIES AND TOLERANCES. Threads of locknuts shall be Unified coarse or fine series, as specified in USA Standard USAS B1.1, except that the portion of the threaded length containing the prevailing-torque element need not conform. Unless otherwise specified Class 2B tolerances shall apply.

3.2.3 THREAD START. Locknuts $\frac{5}{16}$ in. size and smaller shall assemble a minimum of one-half turn, and locknuts $\frac{3}{8}$ in. and larger shall assemble a minimum of one full turn by hand on a basic GO thread plug gage. The plug gage shall be without a chip groove, and shall have a point with dimensions conforming to those for the point on hex cap screws as specified in USAS B18.2.1.

3.3 MECHANICAL REQUIREMENTS

3.3.1 PROOF LOAD. Locknuts shall withstand the proof load specified for the applicable grade in Tables when tested as specified in 4.1 (Tables page 12).

3.3.2 HARDNESS. Locknuts shall have a hardness not in excess of the hardness specified for the applicable grade in Table (see page 13) when tested as specified in 4.2.

3.4 PERFORMANCE REQUIREMENTS

3.4.1 PREVAILING TORQUE. The prevailing torque developed by locknuts during their first installation, or any subsequent installation or removal, shall not exceed the torque specified for the applicable grade in Tables when tested as specified in 4.3. In addition, the prevailing torque developed by locknuts during their first and fifth removals shall not be less than the respective torques specified for the applicable grade in Tables when tested as specified in 4.3. (Tables — page 12).

3.4.2 DEFINITION. The prevailing torque developed by a locknut is the torque necessary to rotate the locknut on its mating externally threaded component, with the torque being measured while the locknut is in motion, and with no axial load in the mating component.

4.0 TEST METHODS

4.1 PROOF LOAD TEST. The test sample locknut shall be assembled on a test bolt (4.1.1) or on a hardened mandrel (4.1.2) with a minimum of three threads projecting through the locknut. For referee test purposes, the hardened mandrel shall be used. The maximum torque occurring during the assembly of the locknut on the test bolt or mandrel shall be recorded. A tensile load equal to the specified proof load for the locknut, as given in Tables shall be applied through the test bolt or mandrel against the locknut bearing surface in an axial direction. The locknut shall resist this load without thread stripping or rupture. The torque necessary to remove the locknut from the test bolt or mandrel shall not exceed the maximum torque occurring during assembly. (Tables — page 12.)

4.1.1 TEST BOLT. The bolt used for proof load testing a locknut shall have threads conforming to Class 2A tolerances as specified in USAS B1.1. The test bolt shall have a yield strength in excess of the specified proof load of the locknut being tested.

4.1.2 HARDENED MANDREL. The hardened mandrel used for proof load testing a locknut shall have threads conforming to Class 3A tolerances as specified in USAS B1.1, except that the major diameter shall be the minimum major diameter with a plus tolerance of 0.002 in. The mandrel shall be heat treated to a hardness of Rockwell C45 to 50.

Complete Industrial Fasteners Institute Standard No. — 100 available on request.

4.2 HARDNESS TEST. The Rockwell hardness of a sample locknut shall be determined on opposite polished surfaces on the top or bottom face of the locknut halfway between the thread and the hexagon corner. The preparation of the test specimen and the method of performing the test shall conform to ASTM Standard E18.

4.3 PREVAILING-TORQUE TEST. The prevailing-torque test shall be conducted using a load measuring device (4.3.1). A test bolt (4.3.2) shall be inserted in the load measuring device, a hardened washer (4.3.3) placed on the bolt and the sample locknut then assembled on the bolt. The locknut shall be advanced on the bolt until a minimum of three full bolt threads protrude through the locknut. At that time, the maximum torque occurring while the locknut is being advanced through the next 360° of locknut rotation shall be recorded. This torque shall not exceed the first installation prevailing torque value as specified for the applicable grade in Tables.

Tightening shall be continued until the locknut is seated against the hardened washer. The length of the test bolt should be such that seating of the locknut shall occur within one full turn following measurement of the first installation prevailing torque. The locknut shall then be tightened until a tensile load equal to the clamp load, as specified for the applicable grade in Tables, is developed in the bolt. The hardened washer shall be prevented from turning during locknut tightening. The locknut shall then be backed off by the application of reverse torque until the tensile load in the bolt has been reduced to zero. The minimum torque occurring while the locknut is being backed off through the next 360° of locknut rotation shall be recorded. This torque shall not be less than the first removal prevailing torque value as specified for the applicable grade in Tables.

The locknut shall then be backed off until the prevailing-torque element is disengaged from the bolt thread. The locknut shall be reassembled and removed four more times. On each reassembly, the locknut shall be advanced sufficiently to permit two full bolt threads to protrude through the locknut, but no clamp load shall be induced in the bolt. At no time during these four additional installations and removals should the torque exceed the maximum first installation prevailing torque value as specified for the applicable grade in Tables. During the fifth removal, the minimum torque occurring while the locknut is being backed off through the first 360° of locknut rotation shall be recorded. This torque shall not be less than the fifth removal prevailing torque value as specified for the applicable grade in Tables. Sufficient time shall elapse between torquing cycles to prevent overheating of the test assembly. (Tables page 12).

4.3.1 LOAD MEASURING DEVICE. The load measuring device used in the prevailing torque test shall be an instrument capable of measuring the actual tension induced in the test bolt as the locknut is tightened. The device shall be accurate within plus or minus 5 percent of the test clamp load being used. Diameter of the bolt clearance hole in the backing plate should be the same diameter and tolerances as the test washer.

4.3.2 TEST BOLT. The test bolt used in the prevailing-torque test shall have a plain finish, as manufactured, without any plating, coating, or special lubrication.

The bolt shall have threads conforming to Class 2A tolerances as specified in USAS B1.1. Threads on all bolts 1 in. diameter and smaller shall be produced by rolling. Bolt length shall be such that a minimum length of five threads as measured from the end of the bolt will protrude through the locknut when the locknut is seated against the test washer. Thread length shall be such that a minimum of four full threads are within the grip after the locknut is seated. The bolt shall be pointed in accordance with the dimensional requirements for hex cap screws as given in USAS B18.2.1. The thread surface shall be free of scale, iron oxide, burrs or other contamination that might affect an accurate determination of the prevailing torque developed by the locknut.

The bolt shall have an ultimate tensile strength not less than the specified proof load of the locknut to be tested. The threads of heat treated bolts shall have a metallurgical surface condition equal to or better than Class C (Classes A or B are acceptable) as specified in Federal Specification FF-S-85b.

A new bolt shall be used for testing each locknut.

4.3.3 TEST WASHER. Washers shall conform to the dimensional, metallurgical, and mechanical requirements given in 1.F.1-100.

5.0 MARKING

Grade A locknuts are not required to be marked for grade identification.

Grade B locknuts shall be marked with three equally spaced identical symbols (dot, line, letter, or other character) 120 degrees apart on the chamfered surface of the top of locknut. Grade C locknuts shall be marked with six symmetrically spaced identical symbols on the chamfered surface of the top of locknut. An additional mark to or an alteration of one of the three or six Grade B or C marking symbols may be used to identify the manufacturer. Marks may be raised or depressed at manufacturer's option, however, raised marks shall not project beyond the specified maximum height or width of locknut, as given in Table 1.

Alternatively, at the manufacturer's option, Grades B and C locknuts may be marked respectively with the letters B and C located on one side flat of the locknut. Such markings shall not be raised.

As a second alternative, at the manufacturer's option, Grades B and C locknuts may be marked respectively with one and two small notches cut circumferentially into each of the six corners of the locknut at approximately its mid-height.

6.0 INSPECTION

6.1 INSPECTION PROCEDURE. Locknuts shall be inspected to determine conformance with dimensional, mechanical, and performance requirements. Inspection shall be performed in accordance with sampling plans given in MIL-STD-105D, and as specified in 6.2 and 6.3. Alternate inspection procedures may be specified by the purchaser on the purchase order or engineering drawing.

6.2 DIMENSIONAL AND VISUAL CHARACTERISTICS. Dimensional and visual characteristics shall be inspected in accordance with the single sampling plan for normal inspection as specified in MIL-STD-105D. The classification of characteristics and acceptable quality levels shall be:

Duds (wrong size, wrong coating, non tapped, prevailing-torque element missing)	0.4
Width across flats	2.5
Thread start	2.5
Grade marking	2.5
Thickness	4.0
Angularity of bearing surface	4.0

6.3 MECHANICAL AND PERFORMANCE CHARACTERISTICS. Mechanical and performance characteristics shall be inspected in accordance with special inspection level S1 as specified in MIL-STD-105D. The classification of characteristics and acceptable quality levels shall be:

Proof load test	1.0
Hardness test	1.0
First installation prevailing torque	1.0
First removal prevailing torque	1.0
Fifth removal prevailing torque	6.5

Industrial Fasteners Institute Standard No. — 100 Covering Torque-Tension requirements available on request.

INDUSTRIAL FASTENER INSTITUTE
LOCKNUT SPECIFICATIONS

PROOF LOAD, CLAMP LOAD, AND PREVAILING TORQUES FOR STEEL LOCKNUTS
COARSE THREAD SERIES

Nut Size And Threads Per Inch	GRADE A LOCKNUTS					GRADE B LOCKNUTS					GRADE C LOCKNUTS				
			PREVAILING TORQUE					PREVAILING TORQUE					PREVAILING TORQUE		
	Proof Load lb	Clamp Load lb	First Install in. lb max	First Removal in. lb min	Fifth Removal in. lb min	Proof Load lb	Clamp Load lb	First Install in. lb max	First Removal in. lb min	Fifth Removal in. lb min	Proof Load lb	Clamp Load lb	First Install in. lb max	First Removal in. lb min	Fifth Removal in. lb min
No. 4-40	540	250	3.0	1.0	0.5	720	380	3.0	1.0	0.5	910	550	4.0	1.0	0.5
6-32	820	370	6.0	1.5	1.0	1,100	580	6.0	1.5	1.0	1,350	810	8.0	2.0	1.5
8-32	1,250	580	9.0	2.0	1.5	1,700	900	9.0	2.0	1.5	2,100	1,250	12	2.5	2.0
10-24	1,550	720	13	2.5	2.0	2,100	1,100	13	2.5	2.0	2,600	1,550	17	3.5	2.5
12-24	2,200	1,000	20	3.5	2.5	2,900	1,550	20	3.5	2.5	3,650	2,200	27	4.5	3.0
1/4-20	2,900	1,300	30	5.0	3.5	3,800	2,000	30	5.0	3.5	4,750	2,850	40	6.0	4.5
5/16-18	4,700	2,150	60	8.0	5.5	6,300	3,350	60	8.0	5.5	7,850	4,700	80	10.5	7.5
3/8-16	7,000	3,200	80	12	8.5	9,300	4,950	80	12	8.5	11,600	6,950	107	16	11.5
7/16-14	9,550	4,400	100	17	12	12,800	6,800	100	17	12	16,000	9,600	133	23	16
1/2-13	12,800	5,850	150	22	15	17,000	9,050	150	22	15	21,300	12,800	200	30	20
9/16-12	16,400	7,550	200	30	21	21,800	11,600	200	30	21	27,300	16,400	266	40	28
5/8-11	20,300	9,300	300	39	27	27,200	14,500	300	39	27	33,900	20,300	400	52	36
3/4-10	30,000	13,800	400	58	41	40,100	21,300	400	58	41	50,100	30,100	533	78	54
7/8- 9	41,600	11,400	600	88	62	55,500	29,500	600	88	62	69,300	41,600	800	117	82
1 - 8	54,500	15,000	800	120	84	72,800	38,700	800	120	84	91,000	54,600	1070	160	112
1-1/8- 7	68,700	18,900	900	150	105	80,100	42,100	900	150	105	115,000	69,000	1200	200	140
1-1/4- 7	87,200	24,000	1000	188	132	101,700	53,500	1000	188	132	145,000	87,000	1333	250	176
1-3/8- 6	104,000	28,700	1200	220	154	121,300	63,800	1200	220	154	173,000	104,000	1600	293	205
1-1/2- 6	126,000	34,800	1350	260	182	147,500	77,600	1350	260	182	211,000	127,000	1800	346	242

FINE THREAD SERIES

Nut Size And Threads Per Inch	GRADE A LOCKNUTS					GRADE B LOCKNUTS					GRADE C LOCKNUTS				
			PREVAILING TORQUE					PREVAILING TORQUE					PREVAILING TORQUE		
	Proof Load lb	Clamp Load lb	First Install in. lb max	First Removal in. lb min	Fifth Removal in. lb min	Proof Load lb	Clamp Load lb	First Install in. lb max	First Removal in. lb min	Fifth Removal in. lb min	Proof Load lb	Clamp Load lb	First Install in. lb max	First Removal in. lb min	Fifth Removal in. lb min
No. 4-48	600	270	3.0	1.0	0.5	790	420	3.0	1.0	0.5	990	600	4.0	1.0	0.5
6-40	900	420	6.0	1.5	1.0	1,200	640	6.0	1.5	1.0	1,500	900	8.0	2.0	1.0
8-36	1,350	610	9.0	2.0	1.5	1,750	930	9.0	2.0	1.5	2,200	1,300	12	2.5	2.0
10-32	1,800	840	13	2.5	2.0	2,400	1,300	13	2.5	2.0	3,000	1,800	17	3.5	2.5
12-28	2,300	1,050	16	3.5	2.5	3,100	1,650	16	3.5	2.5	3,900	2,350	27	4.5	3.0
1/4-28	3,300	1,500	30	5.0	3.5	4,350	2,300	30	5.0	3.5	5,450	3,250	40	6.0	4.5
5/16-24	5,200	2,400	60	8.0	5.5	6,950	3,700	60	8.0	5.5	8,700	5,200	80	10.5	7.5
3/8-24	7,900	3,600	80	12	8.5	10,500	5,600	80	12	8.5	13,200	7,900	107	16	11.5
7/16-20	10,700	4,900	100	17	12	14,200	7,550	100	17	12	17,800	10,700	133	23	16
1/2-20	14,400	6,550	150	22	15	19,200	10,200	150	22	15	24,000	14,400	200	30	20
9/16-18	18,300	8,350	200	30	21	24,400	13,000	200	30	21	30,500	18,300	266	40	28
5/8-18	22,900	10,500	300	39	27	30,700	16,300	300	39	27	38,400	23,000	400	52	36
3/4-16	33,600	15,400	400	58	41	44,800	23,800	400	58	41	56,000	33,600	533	78	54
7/8-14	45,800	12,600	600	88	62	61,000	32,400	600	88	62	76,300	45,800	800	117	54
1 -14	61,100	16,800	800	120	84	81,500	43,300	800	120	84	101,900	61,100	1070	160	112
1 -12	59,700	16,400	800	120	84	79,600	42,300	800	120	84	99,500	59,700	1070	160	112
1-1/8-12	76,900	21,200	900	150	105	89,900	47,500	900	150	105	128,000	76,800	1200	200	140
1-1/4-12	96,600	26,600	1000	188	132	113,000	59,700	1000	188	132	161,000	96,600	1333	250	176
1-3/8-12	118,000	32,500	1200	220	154	138,000	72,900	1200	220	154	197,000	118,000	1600	293	205
1-1/2-12	142,000	39,100	1350	260	182	166,000	87,700	1350	260	182	237,000	142,000	1800	346	242

NOTE: Clamp loads for Grades A, B, and C locknuts respectively equal 75% of the proof loads specified for Grades 2, 5, and 8 bolts in SAE J429. Clamp loads for Grades B and C locknuts also respectively equal 75% of the proof loads specified for ASTM A449 and ASTM A354 Grade BD bolts.

NOTE: The proof loads for all sizes ¼" and larger apply to Finished Hexagon Locknuts. Proof loads of Finished Hexagon Thick and Heavy Hexagon Locknuts may be assumed as 115 percent of Tabulated Values Proof loads of Finished Hexagon thin (Jam) locknuts may be assumed as 50 percent of Tabulated Values.

MECHANICAL REQUIREMENTS FOR THREADED FASTENERS

from 1965 SAE Handbook

PROOF LOAD, TENSILE STRENGTH AND HARDNESS REQUIREMENTS OF BOLTS

Bolt Size Dia. In.	COARSE THREAD		FINE THREAD		HARDNESS		MATERIAL-HEAT TREATMENT FOR BOLTS
	Proof Load lb. Bolts	Min. Ultimate Tensile Strength lbs.	Proof Load lb. Bolts	Min. Ultimate Tensile Strength lbs.	Brinell	Rockwell	
GRADE 2							
¼	1,750	2,200	2,000	2,500	241 max	100 B max	This is intended to be a cold headed product made from low carbon steel, C 0.28 max., P 0.04 max., and S 0.05 max. Lengths over 6 in. may be hot headed from medium carbon steel, C 0.55 max. *Commercial steel on sizes over ¾".* Deviation from specified chemistry may be made by agreement between producer and consumer. **Recommended— USE GRADE "A" LOCK NUTS**
5/16	2,900	3,600	3,200	4,000	241	100 B	
⅜	4,250	5,350	4,850	6,050	241	100 B	
7/16	5,850	7,350	6,550	8,200	241	100 B	
½	7,800	9,800	8,800	11,050	241	100 B	
9/16	9,450	11,650	10,550	13,000	241	100 B	
⅝	11,750	14,450	13,300	16,400	241	100 B	
¾	17,350	21,400	19,400	23,850	241	100 B	
⅞	12,900	25,400	14,250	28,000	207	95 B	
1	16,950	33,350	18,550	36,450	207	95 B	
1⅛	21,350	41,950	23,950	47,100	207	95 B	
1¼	27,100	53,300	29,950	59,000	207	95 B	
1⅜	32,300	63,550	36,800	72,350	207	95 B	
1½	39,300	77,300	44,000	86,950	207	95 B	
GRADE 5							
¼	2,700	3,800	3,100	4,350	241-302	23-32 C	MEDIUM CARBON STEEL, C 0.28 to 0.55, P 0.04 max., and S 0.05 max. Quenched and tempered at a minimum temperature of 800° F. **Recommended— USE GRADE "B" LOCK NUTS**
5/16	4,450	6,300	4,950	6,950	241-302	23-32 C	
⅜	6,600	9,300	7,450	10,550	241-302	23-32 C	
7/16	9,050	12,750	10,100	14,250	241-302	23-32 C	
½	12,050	17,050	13,600	19,200	241-302	23-32 C	
9/16	15,450	21,850	17,250	24,350	241-302	23-32 C	
⅝	19,200	27,100	21,750	30,700	241-302	23-32 C	
¾	28,400	40,100	31,700	44,750	241-302	23-32 C	
⅞	36,050	53,150	39,700	58,550	235-302	22-32 C	
1	47,250	69,700	51,700	76,250	235-302	22-32 C	
1⅛	56,450	80,100	63,350	89,900	223-285	19-30 C	
1¼	71,700	101,750	79,400	112,650	223-285	19-30 C	
1⅜	85,450	121,300	97,300	138,100	223-285	19-30 C	
1½	103,950	147,550	117,000	166,000	223-285	19-30 C	
GRADE 8							
¼	3,800	4,750	4,350	5,450	302-352	32-38 C	MEDIUM CARBON FINE GRAIN ALLOY STEEL*, C 0.28 to 0.55, P 0.04 max. and S 0.05 max. providing sufficient hardenability to have a minimum oil quenched hardness of 47 RC at the center of the threaded section one diameter from the end of the bolt. Oil quenched and tempered at a minimum temperature of 800° F. *Carbon steel may be used by agreement between producer and consumer. **Recommended— USE GRADE "C" LOCK NUTS**
5/16	6,300	7,850	6,950	8,700	302-352	32-38 C	
⅜	9,300	11,650	10,550	13,150	302-352	32-38 C	
7/16	12,750	15,950	14,250	17,800	302-352	32-38 C	
½	17,050	21,300	19,200	24,000	302-352	32-38 C	
9/16	21,850	27,300	24,350	30,450	302-352	32-38 C	
⅝	27,100	33,900	30,700	38,400	302-352	32-38 C	
¾	40,100	50,100	44,750	55,950	302-352	32-38 C	
⅞	55,450	69,300	61,100	76,350	302-352	32-38 C	
1	72,700	90,900	79,550	99,450	302-352	32-38 C	
1⅛	91,550	114,450	102,700	128,400	302-352	32-38 C	
1¼	116,300	145,350	128,750	160,950	302-352	32-38 C	
1⅜	138,600	173,250	157,800	197,250	302-352	32-38 C	
1½	168,600	210,750	189,700	237,150	302-352	32-38 C	

MECHANICAL PROPERTY REQUIREMENTS OF LOCKNUTS

Grade	Locknut Size (Bolt Dia.) In.	Proof Load Stress psi	Rockwell Hardness Max.
A	¼ thru 1½	90,000	C24
B	¼ thru 1	120,000	C24
	Over 1 thru 1½	105,000	C24
C	¼ thru 1½	150,000	C35

PLATING

The recommended types of plating for GRIPCO Lock Nuts are: 1. Cadmium and wax; 2. cadmium dichromate (Iridite) and wax, 3. phosphate and oil or wax. The wax lubricant is added after plating to minimize application torque build-up. If the lock nuts for your application require plating, we recommend that it be done by the GRIPCO Company as the wax lubricant is applied after plating.

Neither zinc plating nor zinc dichromate plating are recommended for GRIPCO Lock Nuts. Neither will be supplied unless your instructions specifically call for these platings. Other types of plating such as copper, tin, barrel nickel, Dulite, etc., can be supplied at a nominal cost. Prices are quoted on request. Stainless steel lock nuts are supplied with nickel tin plating.

WHEN ORDERING:

1. **Specify type of plating.**
2. **Cadmium plating supplied .0002-.0004.**
3. **State the thickness range, if other thickness of plating is required.**

■ HOW TO ORDER

1. **Specify quantity required.**
2. **Specify delivery date.**
3. **State your part number and Gripco part number.**
   - **A.** Gripco part numbers are for steel parts and are descriptive, showing the type locking feature, dimensions of nut, size and threads per inch, material.
   - ■ For Brass Nuts, change letter "S" to "B"
   - ■ For Aluminum Nuts, change letter "S" to "A"
   - ■ For Stainless Steel Nuts, change letter "S" to "X" (Add type stainless)
   - ■ For Silicon Bronze (Everdure) Nuts, change letter "S" to "E"
   - ■ For Monel Nuts, change letter "S" to "M"
   - ■ For Jam Nuts, add word jam to part number.
   - ■ If plating is required, specify type and thickness range required. See Plating above.

■ HOW TO INQUIRE

1. **Contact the Gripco representative in your area for his advice.**
   - **A.** In some cases, we may have a standard part to meet your requirements.
   - **B.** We may be making a special, which will satisfy your requirements.
2. **Supply prints and samples, if possible, of part on which you wish Gripco to quote.**
   - **A.** Give details of the application.
   - **B.** Type bolt on which the parts will be used, Grades 2, 5 or 8.

Note: All orders and inquiries should be sent to the South Whitley Plant.

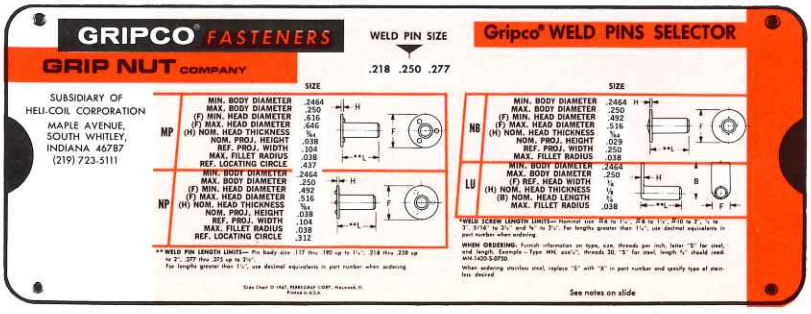
DECIMAL EQUIVALENTS

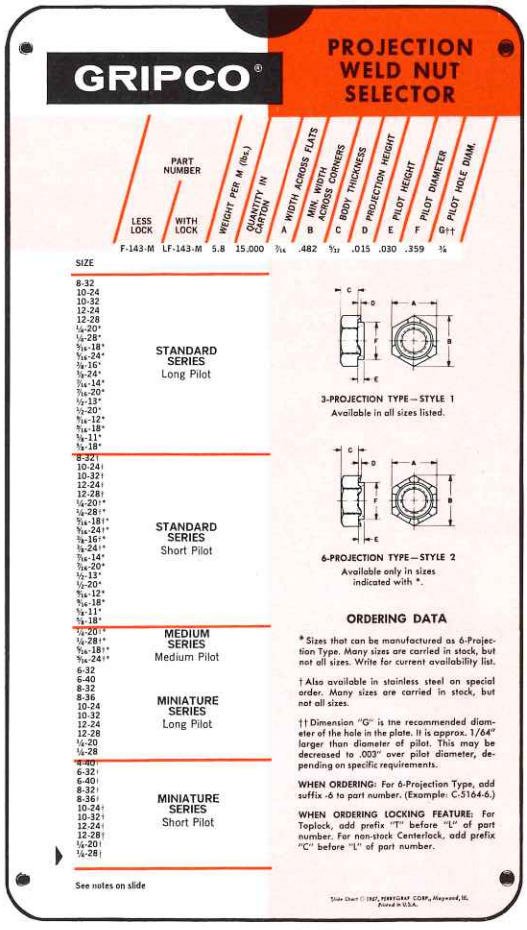
1/64 = .015625	21/64 = .328125	45/64 = .703125
1/32 = .03125	11/32 = .34375	23/32 = .71875
3/64 = .046875	23/64 = .359375	47/64 = .734375
1/16 = .0625	**3/8 = .375**	**3/4 = .75**
5/64 = .078125	25/64 = .390625	49/64 = .765625
3/32 = .09375	13/32 = .40625	25/32 = .78125
7/64 = .109375	27/64 = .421875	51/64 = .796875
1/8 = .125	**7/16 = .4375**	**13/16 = .8125**
9/64 = .140625	29/64 = .453125	53/64 = .828125
5/32 = .15625	15/32 = .46875	27/32 = .84375
11/64 = .171875	31/64 = .484375	55/64 = .859375
3/16 = .1875	**1/2 = .5**	**7/8 = .875**
13/64 = .203125	33/64 = .515625	57/64 = .890625
7/32 = .21875	17/32 = .53125	29/32 = .90625
15/64 = .234375	35/64 = .546875	59/64 = .921875
1/4 = .25	**9/16 = .5625**	**15/16 = .9375**
17/64 = .265625	37/64 = .578125	61/64 = .953125
9/32 = .28125	19/32 = .59375	31/32 = .96875
19/64 = .296875	39/64 = .609375	63/64 = .984375
5/16 = .3125	**5/8 = .625**	**1 = 1.**
	41/64 = .640625	
	21/32 = .65625	
	43/64 = .671875	
	11/16 = .6875	

FREE ON REQUEST *Three Handy Slide Indicators*

- **Dimension selector for unified Standard Hexagon Nuts.**
- **Projection Weld Nut Selector.**
- **Weld Pin and Weld Screw Selector**

GRIPCO FASTENERS
NUT SIZE
7/16 1/2 9/16
TOPLOCK NUT
CENTERLOCK NUT
CROWNLOCK NUT
PILOT WELD NUT
CLINCH NUT
NC
NF
THREADS PER INCH 13
NUT UN 2B MAJOR DIAMETER .5000 MAX. PITCH DIAM. .4565 MIN. PITCH DIAM. .4500
BOLT UN 2A MAX. MAJOR DIAM. .4985 MIN. MAJOR DIAM. .4876 MAX. PITCH DIAM. .4485 MIN. PITCH DIAM. .4435
THREADS PER INCH 20
NUT UN 2B MAJOR DIAMETER .5000 MAX. PITCH DIAM. .4731 MIN. PITCH DIAM. .4675
BOLT UN 2A MAX. MAJOR DIAM. .4987 MIN. MAJOR DIAM. .4906 MAX. PITCH DIAM. .4662 MIN. PITCH DIAM. .4619
GENERAL DIMENSIONS FOR NUTS AND BOLTS
GRIP NUT COMPANY
SUBSIDIARY OF HELI-COIL CORPORATION
MAPLE AVENUE, SOUTH WHITLEY, INDIANA 46787
(219) 723-5111





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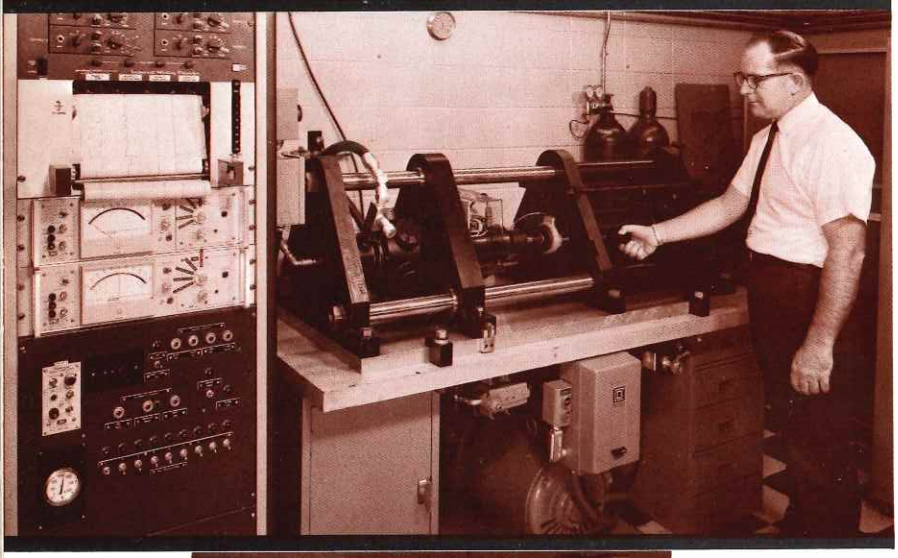

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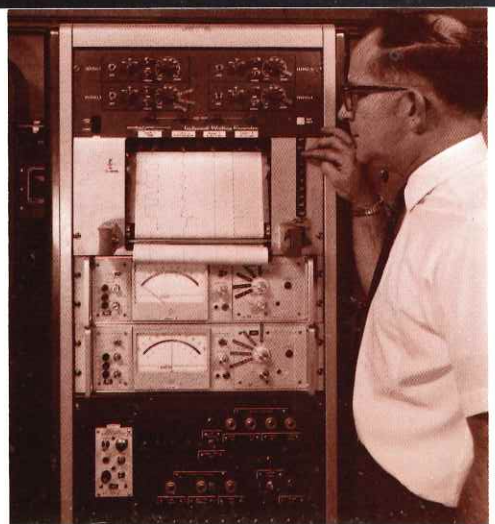


4

GRIPCO®

MODERN PHYSICAL AND METALURGICAL TESTING LABORATORY

Gripco now has the most modern laboratory facilities for fastener engineering and testing as well as evaluation of customer fastener applications.

Photographs show some of the equipment:

PHOTO #1:

Two Meter Spectrometer for analysis of steel. Equipped for 12 elements with sequential digital readout.

PHOTO #2:

From left to right:

- 120,000 lb. Tinius Olsen Super L Tensile Tester
- Model 4 TTBB Wilson Hardness Tester
- Model 4 JE Wilson Superficial Hardness Tester
- Model 10-1030 Abrasive cut-off saw
- Dumet Wet Belt Surfacer

PHOTO #3:

Automatic TORQUE-TENSION machine used for evaluation and qualification of lock nuts.

PHOTO #4:

Read out of TORQUE-TENSION machine showing:

1. RPM
2. Prevailing Torque
3. Torque at clamp load
4. Clamp load

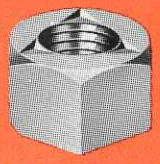
specify

GRIPCO®

for reliability, availability and design support

GRIPCO LOCK NUTS

Crownlock Nuts—A new GRIPCO concept. Now available for Grade 2, 5, and 8 bolts.



Toplock Nuts—The toplock feature is used for jam, hi, flange, washer, weld, clinch and special configuration nuts.

Centerlock Nuts—Prevailing torque nuts for volume low cost applications. Double-chamfered with the locking feature in the center threads, permits application from either end.

Centerlock Cap Nuts, Open and Closed End—For decorative appearance, protection against snagging and contamination. Available in steel, stainless, aluminum and brass.

GRIPCO FLANGE FASTENERS

Gripco Flange Nuts*—a strong, cold-formed washer-nut combination. An ideal nut to withstand vibration on compressors and engine mounts.

Tensilock® Nuts—Feature the advanced design concept of an annularly gooved, serrated locking flange. Tightening provides lock that holds under vibration or cyclic heating and cooling.

Tensilock Screws—Operate on the same principle as Flange Nuts.

Gripco Washer Nuts*—Provide standard nut with greater bearing area. Except for washer element, dimensions are the same as Gripco Finished Series Nuts. Reinforced base prevents dilation when torqued.

GRIPCO PRE-POSITIONED FASTENERS

Clinch Nuts*—With hex body and hex collar. Collar fits into hexagon pierced hole to prevent turning during installation or removal of bolt.

Pilot Projection Weld Nuts*—Three or six projections for non-rocking electrical connections during welding. Pilot centers nut, prevents weld splatter. (Low carbon steel or stainless.)

Tab Weld Nuts*—Pilot projection type with single or four weld projections. Spotweld type with single or double spot weld areas.

Countersunk Weld Nuts*—Countersink eliminates splatter in threads and need for retapping after welding. Three weld projections for firm electrical connection. Six weld projection type for curved surface applications.

Weld Screws—Six standard types with weld projections on the top or underside of head for thru-hole, flat or curved surfaces, hermetic seal, channel and limited space applications.

Weld Pins—Three standard types with weld projections on top or underside of heads. For thru-hole, blind and spade type or confined area applications.

*Available with or without GRIPCO toplock feature.

SPECIAL SCREWS, BOLTS AND NUTS

Curved head Screws—The ideal screw for use with all types of round tubing or pipe.

Special Screws and Carriage Bolts—Rib neck bolts available on special order.

Finished and Heavy Hexagon Nuts—Are stocked for immediate delivery in full and jam thicknesses.

DESIGN ASSISTANCE AND SPECIALS

When you need specially designed fasteners, it would be wise to call on GRIPCO. Our design department is at your service to help you come up with exactly the fastener you need. Our modern facilities, including cold-forming and head equipment, are set up to give you the best and fastest service in the industry.

GRIPCO will produce specials that conform to your design and specifications or we can provide endless variations of the GRIPCO catalog line, including extra long or short pilot, non-standard diameters, oversize heads or flanges, etc. GRIPCO has specialized in specials for years. For engineering assistance, write today.

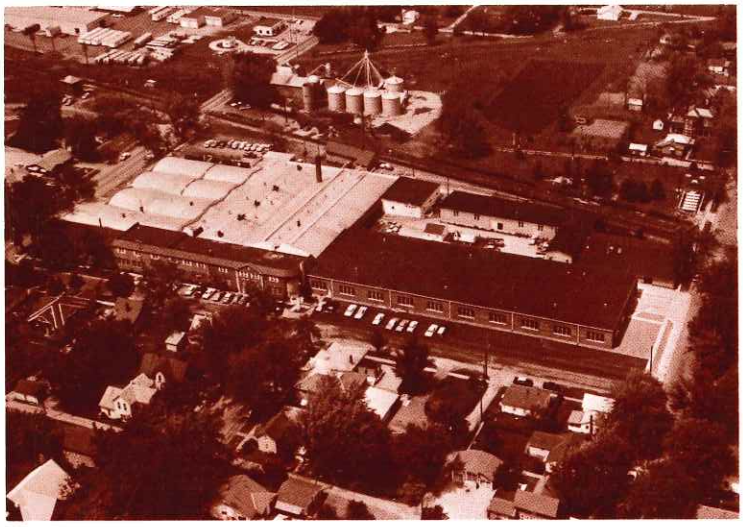
® Reg. U.S. Pat. Off.

GRIPCO
FASTENERS

MEMBER INDUSTRIAL FASTENERS INSTITUTE

Gripco Fastener Division/Mite Corporation

New Concepts Earn Leadership



■ SOUTH WHITLEY, INDIANA PLANT

■ MONTPELIER, INDIANA PLANT

The Gripco Fastener Division of Mite Corporation now has two plants to take care of the ever increasing demand for Gripco Fasteners.

Quick customer service during the past 65 years has earned, the distinction of being a performing leader in the lock nut fastener field. New lock nut designs and equipment have strengthened this position.

At the Gripco Fastener Division of Mite-Corp., a customer's fastener requirements are engineered and solved promptly. Specially trained fastener engineers, located in principal industrial centers from coast to coast and the capability to deliver promptly, from large inventories of most catalog items, have helped to ease many tight design and production schedules in customer plants.

Should your product designer, production engineer or valve analyst wish to discuss a particular fastener need, we will welcome the opportunity.

As Gripco Fastener Engineers serve you, they are backed by . . .

- Our two centrally located manufacturing plants at South Whitley, Indiana, and the other at Montpelier, Indiana.
- Offices are at South Whitley, Indiana only.
- Experienced metallurgical and engineering personnel.
- Expanded modern test facilities.
- Modern manufacturing equipment and facilities, capable of producing over 3 million fasteners daily.

As an active member of the leading farm and fastener association, Gripco helps guide and contribute toward the solution of tomorrow's fastener needs.

MEMBER F·E·M·A·

Farm Equipment Manufacturers Association

SFEM

Southern Farm Equipment Manufacturers, Inc.

FARM and INDUSTRIAL FIEI EQUIPMENT INSTITUTE

MEMBER IFI INDUSTRIAL FASTENERS INSTITUTE